

ALLEGATO A

UNIVERSITÀ DEGLI STUDI DI MILANO

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Federica Cossu CURRICULUM VITAE

INFORMAZIONI PERSONALI (NON INSERIRE INDIRIZZO PRIVATO E TELEFONO FISSO O CELLULARE)

COGNOME	COSSU
NOME	FEDERICA
DATA DI NASCITA	13/09/1983

INSERIRE IL PROPRIO CURRICULUM
(non eccedente le 30 pagine)

Data Luogo

Married, two periods of maternity leave, available for business trips, driving license, with car.

Summary of scientific production:

Total number of publications: 13 (average IF: 2,85, average IF as first author: 2,98) + 1 submitted; One national Award and one Patent; Participation to 8 national and international congresses (two as invited speaker); H-index: 7.

Education

- 11/15 Attendance to Master in **Europrogettazione 2014-2020®** - Edizione Speciale Summer School organized by da Eurogiovani and Europa Cube Innovation Business School.
- 01/12 **Philosophiae Doctor** in Cellular and Molecular Biology at the University of Milan
Thesis Title: Structural Insights into Inhibitor of Apoptosis Proteins Recognition by Pro-Apoptotic Compounds.
- 07/07 **Master Degree** in Functional genomics and Bioinformatics (Biotechnology) 110/110 cum laude.
- 07/05 Bachelor's Degree in Industry and Environment Biotechnology - Bioinformatics.
Thesis Title: Discrete models describing Ca²⁺ transport through the cellular plasmatic membrane.

Award and Patent

- 1) SILS/Bruker Award for the best PhD thesis in the Biomedical Field (edition 2013)
http://www.synchrotron-radiation.it/sils/premiodottorato/verbale_premio_dottorato_2013.pdf
- 2) Seneci PF, Belvisi L, Cossu F, Delia D, Drago C, Lecis D, Maiorana S, Manzoni LP, Mastrangelo E, Milani de Mayo de Mari M, Perego P, Vasile F. New homo- and heterodimeric SMAC mimetic compounds as apoptosis inducers. Application n°: PCT/IB2012/000297, Pub n°WO2013124701 A2. *Recently licenced to a German industrial company.*

Career breaks

03/16 - 08/16 Maternity leave

12/13 - 04/14 Maternity leave

Research Experience

The research activity was conducted both at *non-academic* and *academic* organizations, mainly at the Biochemistry and Structural Biology unit at the Dept. of Biosciences (University of Milan, prof. Martino Bolognesi) and at the Institute of Biophysics (UOS Milano) at the National Research Council (Dr. Mario Milani). Several periods were spent abroad (*i.e.* Université of Paris-Sud, Soleil Synchrotron in Paris and ESRF - Grenoble) to improve the candidate expertise on biochemical and biophysical experimental techniques. The bioinformatics expertise was further enriched through the collaboration with Prof. Dario Di Francesco at the University of Milan.

The research activity regarded mainly:

- 1) the structure-based design of pro-apoptotic compounds using *in silico* docking and protein crystallography;
- 2) the biochemical and biophysical characterization of proteins, as targets for cancer therapy, alone and in the presence of compounds with potential anti-tumoral activity;
- 3) *in vitro* assays to determine dissociation constants and biophysical properties of the protein/compounds adducts, to drive the research pipeline towards the selection of leads to be tested using cell-based and *in vivo* techniques;
- 4) the characterization of macromolecular complexes involved in the cancer onset, particularly localized in the cellular NF- κ B pathway and in the caspase-induced apoptosis caused by cellular stress.

03/16 - Today Until 31/07/2017 Post-Doc at IBF-CNR via Celoria, 26 - 20133 Milan

Project: Analisi strutturale e Ricerca di inibitori di proteine ricombinanti umane coinvolte nella regolazione del pathway NF- κ B. *Ruolo: attività di ricerca e coordinamento di un post-doc e di uno studente magistrale.* Supported by AIRC, MFAG2015

08/14 - 02/16 Post-Doc at IBF-CNR via Celoria, 26 - 20133 Milan

Two Projects: (1) Analysis of recombinant proteins, from human or viruses, involved in several pathologies. (2) Analisi strutturale e Ricerca di inibitori di proteine ricombinanti umane coinvolte nella regolazione del pathway NF- κ B. *Ruolo: attività di ricerca e coordinamento di un frequentatore post-laurea e di uno studente triennale e uno magistrale.* Supported by AIRC, MFAG2015,

05/14 - 06/14 Collaborator at Consortium Milano Ricerche - via Leopoldo Cicognara, 7 20129 - Milan

Project: HCN1 channel block by ivabradine: homology modelling of the channel pore.

10/13 - 11/13 Collaborator at Humanitas Mirasole Hospital - via Manzoni, 56 - I-20089 Milan

Project: Expression, Purification and Structure of CaVb2 mutant.

03/12 - 08/13 Post-Doc at the Dept. of Biosciences - Structural Biology Unit, University of Milan via Celoria, 26 - I-20133 Milan

Project NEPENTE: Network lombardo di eccellenza PER lo sviluppo di farmaci di origine Naturale diretti alla modulazione del microambiente tissutale per la prevenzione e Terapia dei tumori e delle malattie neurodegenerative. *Ruolo: attività di ricerca e coordinamento di un frequentatore post-laurea e di uno studente magistrale.* Supported by Regione Lombardia.

05/08 - 09/08 Fellow Post-laurea at the Structural Biology Unit, Dept. of Biosciences - University of Milan via Celoria, 26 - I-20133 Milan

Project “Dote ricercatore” supported by Regione Lombardia-Prodest: Characterization of Pro-apoptotic compounds versus XIAP (X-linked Inhibitor of Apoptosis Protein) and study of molecular recognition through protein crystallography and virtual docking. *Ruolo: attività di Ricerca e report direttamente a Regione Lombardia.*

10/07 - 03/08 Collaborator at C.I.S.I. (Centro Interdisciplinare di Studi bio-molecolari e applicazioni Industriali) Via Fantoli, 16/15 - 20138 Milan

Project: Structural analysis and biophysical characterization of anti-tumoral compounds.

Other Activities

- **Missions** to European synchrotron facilities (ESRF - Grenoble, SOLEIL - Paris) for X-ray data collection on protein crystals and solutions.
- **Drafting of grant requests** to national and international foundations and Public Institutions.
- Coordination of the research activities within AIRC founded projects
- **Tutor/co-tutor** of four students during their master degree and co-supervision of one PhD student and active participation to **Students Orienting Events** for University of Milan; **Moderator** within the evaluation process of the Biotechnology required course at the University of Milan (May 2011), *organizing students meetings, elaborating surveys and final reports to the academic commission.*
- Examiner assistant and **teaching activity** giving lectures on the “Structural and biophysical approaches applied to the design of pro-apoptotic compounds” within biochemistry lessons for master degree students at the University of Milan.
- **Drafting of scientific reports** to Institutions, as to Regione Lombardia for the project “Dote Ricercatore”.
- **Spokeswoman** of PhD students within the XXIV cycle PhD school in Cellular and Molecular Biology at the Dept. of Biosciences - University of Milan, *organizing workshops and meetings.*
- **Management of lab equipment orders and grant management** together with heads of laboratory, making decisions about the scientific activity, the expenses for equipment and instruments, thus actively participating in the research pipeline.
- **Technical supervision** and maintenance of instruments for protein chromatography instruments - HPLC (ÄKTA systems).
- **Translator** of scientific books on biochemistry for Pearson and Zanichelli and of scientific videos for Stonebird production within the European FP7 Project Vizier.
- **Interviews** with Press Offices and Newspapers (“Un Diablo Contro il Tumore” - Veneto Nanotech, 11 November 2011; “Un Diablo anti cancro” - Repubblica salute, 27 November 2008)

Technical skills and Competences

- Molecular Biology Techniques (PCR, DNA purification) and Main Cloning Protocols
- Expression of Recombinant Proteins (involved in cellular death and surviving pathways) in heterologous systems (*E. coli*), Protein Purification and Characterization with FPLC-HPLC (ÄKTA Systems).
- Protein Biochemical and Biophysical Characterization (SDS-PAGE, Static and Dynamic Light Scattering, Thermofluor, Isothermal Titration Calorimetry, Small Angle X-ray Scattering, Microscale Thermophoresis, *in vitro* ubiquitination assays and Western Blot).
- Protein Crystallization and Crystallographic Tools for Data collection and Structure Determination (Main Crystallization Techniques and X-ray data collection software's, CCP4 package, Coot, Pymol).
- Tools for Molecular Bioinformatics for the analysis of nucleotide and aminoacidic sequences, the prediction of peptide and protein structures through homology modelling and techniques of Molecular Dynamics and Virtual Docking of small molecules on protein targets.
- Principles of Systems Biology for the *in silico* description of biological systems through the implementation of discrete mathematical models (P systems).

Languages Italian (Mother tongue); English (Fluent, spoken and written); French (basic level)

Computer Skills ECDL Full Certification; Full Office Package e Operating Systems: Windows, MacOs, Linux

Other softwares: Modeller9v3, CCP4 package, Coot e Pymol (for collection and analysis of X-ray diffraction data on protein crystals and solutions, and for the determination and visualization of high and low resolution protein structures), Dynamic V5 e V6 (DynaPro Instruments), CFX Manager (BioRAD), Unicorn (software for ÄKTA-HPLC), Photoshop.